

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (original) An endovascular tissue removal device comprising:
a lumen including a rotatable terminal hub advanceable in vasculature;
at least one fiber extending from the hub for ablating tissue; and
an expandable mechanism connected to the fiber for biasing it into position for
precisely ablating tissue as the hub rotates.
2. (original) The device of claim 1 in which there are a plurality of fibers extending
from the hub and connected to the expandable mechanism so that the plurality of fibers can be
spread apart for tissue ablation and also collapsed together for vascular insertion and removal.
3. (original) The device of claim 1 in which the expandable mechanism is a
circumferentially expanding balloon.
4. (original) The device of claim 3 in which there are two balloons, one inside and
one outside of the distal end of the fiber.
5. (original) The device of claim 3 in which the lumen includes an inflation conduit
therein connected to the balloon.
6. (original) The device of claim 1 in which the fiber is an optical fiber connected to
a source of laser energy.

7. (original) The device of claim 1 in which the fiber is a waveguide connected to a source of laser energy.

8. (original) The device of claim 1 further including a tissue trap device surrounding the expandable mechanism.

9. (original) The device of claim 1 in which the fiber includes an angled distal portion.

10. (original) The device of claim 1 further including a mirror for redirecting the ablation energy.

11. (original) The device of claim 1 further including an expandable mechanism inflatable on the ventricular side of the valve for supporting the leaflets of the valve.

12. (original) The device of claim 11 further including an absorptive surface on the expandable mechanism for absorbing ablation energy.

13. (original) The device of claim 11 in which the expandable mechanism is a balloon.

14. (original) An endovascular tissue removal device comprising:

a hub advanceable in vasculature;
a plurality of fibers extending from the hub for ablating tissue; and
an expandable mechanism connected to the plurality of fibers for spreading the
fibers into position for resection and for collapsing the fibers together for vascular insertion and
removal.

15. (original) An endovascular tissue removal device comprising:
a hub advanceable in vasculature;
a plurality of fibers extending from the hub for ablating tissue; and
an expandable balloon connected to the plurality of fibers for spreading the fibers
into position for resection and for collapsing the fibers together for vascular insertion and
removal.

16. (original) An endovascular tissue removal device comprising:
a fiber advanceable within vasculature to ablate tissue;
an outer expandable balloon; and
an inner expandable balloon spaced from the outer expandable balloon forming a
space within which the fiber travels to resect tissue.

17. (original) The endovascular tissue removal device of claim 16 in which the outer
expandable balloon is a portion of a tissue trap device.

18. (original) The endovascular tissue removal device of claim 16 in which the distal

end of the fiber is angled.

19. (original) The endovascular tissue removal device of claim 16 further including an expandable mechanism inflatable on the ventricular side of the valve for supporting the leaflets of the valve.

20. (original) The endovascular tissue removal device of claim 19 further including an absorptive surface on the expandable mechanism for absorbing ablation energy.

21. (original) The endovascular tissue removal device of claim 19 in which the expandable mechanism is a balloon.

22. (currently amended) A method of removing the aortic valve, the method comprising:

introducing a lumen within the vasculature of a patient to a situs proximate a heart valve to be resected;

introducing ablative energy into the lumen; and

rotating the lumen to resect the heart valve by the ablative energy.

23. (original) An endovascular valve removal device comprising:

a lumen including a rotatable terminal hub advanceable in vasculature;

at least one fiber extending from the hub for ablating valve tissue;

a first expandable mechanism connected to the fiber for biasing it into position for

precisely ablating valve tissue as the hub rotates; and

a second expandable mechanism inflatable on the ventricular side of the valve for supporting the valve leaflets during resection.